

IN THE SPECIFICATION:

Please amend the Specification as follows:

Please amend page 3, lines 9-24 as follows:

In the present invention, a carbon nanofiber system is synthesized with very high purity (above 95%), high crystallinity, selectivity of the carbon morphology, and exceptionally high yield. A custom made catalyst with an average single crystal-particle size of ≤ 10 nm and a high surface area (>50 m²/g), provides a higher morphological selectivity and higher reactivity than heretofore attainable. The reactivity of these catalyst particles is maintained even after 24 hours reaction such that yield exceeds 200g_carbon per gram of catalyst. The catalysts which are key to the products and yield achieved are prepared to specific parameters (size distribution, composition and crystallinity) specified and via a flame synthesis process as taught in U.S. Patent No. 6,132,653. The disclosure of U.S. Patent No. 6,132,653, is totally incorporated herein by reference thereto.

Please amend page 4, lines 9-12 as follows:

It is a further object of the present invention to produce a carbon nanomaterial in the presence of a custom made catalyst so that over a given amount of time the yield exceeds 200g_carbon/g of catalyst.

Please amend page 6, lines 10-25 as follows:

a. Conventional or commercial catalyst:

A known amount of pre-reduced catalyst (0.1g) was placed in a ceramic boat or a quartz cylinder. The boat was then transferred into a quartz reactor ($\varnothing=47$ mm). The reactor was flushed for 30 min with nitrogen gas with a flow rate of 200sccm. The reactor was heated up to 450°C with a heating rate of 5°C/min under 10-20% H₂ (balanced with N₂). This was held for 1 h at this temperature. The temperature was then increased to reaction temperature 600°C for iron or 650°C for iron-nickel catalyst in 30 min under N₂ flow. Once the set temperature

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was stabilized, the reaction gas (CO/H_2 or $\text{C}_2\text{H}_4/\text{H}_2$)_was introduced into the reactor for different periods of time (1, 2, 4, 6, 8 and 24h).

Please amend page 11, pages 16-33 as follows:

The catalyst, produced by the method described in U.S. Patent No. 6,123,653, incorporated herein by reference, is a metal oxide catalyst selected from the metals including iron, nickel, cobalt, lanthanum, gold, silver, molybdenum, iron-nickel, iron-copper and their alloys. There may be other suitable metal oxides which may be found as experimentation continues. The catalyst, itself, is prepared to specific parameters (size distribution, composition and crystallinity)_specified and via a flame synthesis process; and it possesses a single crystal morphology. By utilizing the catalyst from the group identified, the resulting yield of carbon nanomaterial is $\geq 140\text{g}$ carbon per g catalyst, but it may be more, while the morphology of the carbon micro structure comprises graphite planes of controllable orientation (depending on catalyst composition and carbonaceous feedstock) perpendicular or parallel to the carbon growth axis resulting in the 99.6% purity of the carbon product.